CLAIMS:

1. A pulse shape modulation method for modulating a pulse shape of a pulsed laser beam used in recording operations for an information recording medium, based on the jitter of a reproduced signal from the information recording medium, the method comprising:

specifying an amplitude modulation gain for the reproduced signal that makes the jitter the minimum;

determining whether the amplitude modulation gain corresponding to the minimum jitter resides within a prescribed range; and

modulating the pulse shape of the pulsed laser beam when the amplitude modulation gain corresponding to the minimum jitter is outside the prescribed range.

2. The method of claim 1, wherein if the amplitude modulation gain is greater than the upper limit of the prescribed range, at least one of the shape of a pulse used to form a shortest mark region and the shape of a pulse used to form a longest mark region

is modulated.

3. The method of claim 2, wherein when modulating the shape of the pulse used to form the shortest mark region, the rising timing of the pulse is advanced.

4. The method of claim 2, wherein when modulating the shape of the pulse used to form the longest mark region, the rising timing of the pulse is delayed.

5. The method of claim 1, herein if the amplitude modulation gain is less than the lower limit of the prescribed range, at least one of the shape of a pulse used to form a shortest mark region and the shape of a pulse used to form a longest mark region is modulated.

6. The method of claim 5, wherein when modulating the shape of the pulse used to form the shortest mark region, the falling timing of the pulse is advanced.

7. The method of claim 5, wherein when modulating the shape of the pulse used to form the longest mark region, the falling timing of the pulse is delayed.

8. The method of claim 1, herein if the amplitude modulation gain is less than the lower limit of the prescribed range, at least one of the shape of a pulse used to form a mark region located immediately after a shortest space region and the shape of a pulse used to form a mark region located immediately after a longest space region is modulated.

9. The method of claim 8, wherein when modulating the shape of the pulse located immediately after the shortest space region, the rising timing of the pulse is delayed.

10. The method of claim 8, wherein when modulating the shape of the pulse located immediately after the longest space region, the rising timing of the pulse is advanced.

11. The method of claim 1, herein if the amplitude modulation gain is less than the lower limit of the prescribed range, at least one of the shape of a pulse used to form a mark region located immediately before a shortest space region and the shape of a

pulse used to form a mark region located immediately before a longest space region is modulated.

12. The method of claim 11, wherein when modulating the shape of the pulse located immediately before the shortest space region, the falling timing of the pulse is advanced.

13. The method of claim 11, wherein when modulating the shape of the pulse located immediately before the longest space region, the falling timing of the pulse is delayed.

14. The method of claim 1, wherein the amplitude modulation gain is a gain for selectively modulating the amplitude of a signal component contained in the

reproduced signal and corresponding to the shortest mark region formed in the information recording medium.

15. The method of claim 1, wherein the information recording medium has a recording layer in which an organic dye is contained.

16. An information recording method for recording information in an information recording medium using a pulsed laser beam, comprising:

specifying an amplitude modulation gain for a reproduced signal of test data from the information recording medium that makes the jitter the minimum;

determining whether the amplitude modulation gain corresponding to the minimum jitter resides within a prescribed range;

modulating the pulse shape of the pulsed laser beam when the amplitude modulation gain corresponding

to the minimum jitter is outside the prescribed range; and

recording the information in the information recording medium using the pulse modulated laser beam.

17. An information recording and reproducing apparatus for recording information in an information recording medium using a pulsed laser beam, comprising:

a reproduced signal processing circuit that acquires an amplitude modulation gain for a reproduced signal from the information recording medium that makes the jitter of the reproduced signal become the minimum;

a laser control circuit that modulates a pulse shape of the pulsed laser beam when the amplitude modulation gain corresponding to the minimum jitter is not within a prescribed range, and

an optical pickup that records the information in the information recording medium using the pulse-modulated laser beam.

18. An information recording and reproducing apparatus for recording information in an information recording medium using a pulsed laser beam, comprising:

gain acquiring means for acquiring an amplitude modulation gain for a reproduced signal from the information recording medium that makes the jitter of the reproduced signal become the minimum;

pulse shape modulation means for modulating a pulse shape of the pulsed laser beam when the amplitude modulation gain corresponding to the minimum jitter is not within a prescribed range, and

recording means for recording the information in the information recording medium using the pulse-modulated laser beam.